

The invention in which an exclusive right is claimed is defined by the following:

1. A bridge for connecting a computing device to a wireless network, comprising:

(a) a memory in which are stored authentication data and machine instructions, said authentication data being included to enable the bridge to be recognized as compatible for configuration through the computing device;

(b) a port adapted to couple the bridge to a computing device through a wire connector;

(c) a radio that includes a wireless receiver and a wireless transmitter that are coupled to an antenna system;

(d) a processor coupled to the memory, the port, and the radio, said processor executing the machine instructions to carryout a plurality of functions, including:

(i) responding to a discover request from the computing device that is coupled to the bridge by returning an indication of an address of the bridge and configuration information for the bridge, as well as the authentication data, to the computing device via the port;

(ii) responding to a command received from the computing device, to set properties of the bridge so as to enable the bridge to subsequently communicate data to and from the computing device over the wireless network; and

(iii) communicating data between the computing device and the wireless network.

2. The bridge of Claim 1, wherein the authentication data comprise a key that is provided to the computing device, but is not publicly available.

3. The bridge of Claim 2, wherein the machine instructions cause the processor to apply a one-way hashing algorithm that uses the key, to a concatenation of a one-time variable, and the address of the bridge, producing a result that is communicated to the computing device in response to the discover request, to enable the computing device to confirm a compatibility of the bridge for being configured with the properties sent to the bridge by the computing device.

4. The bridge of Claim 1, wherein the machine instructions further cause the processor to respond to a request received from the computing device to enumerate all available wireless networks by scanning for available wireless networks and returning a response to the computing device that identifies an address for each access point of an available wireless network, and other parameters for each available network enumerated by scanning.

5. The bridge of Claim 4, wherein the machine instructions further cause the processor to respond to the subsequent command received from the computing device by setting the properties of the bridge as needed to communicate with an available network identified by scanning.

6. A method for automatically configuring a bridge to communicate over a wireless network, where the bridge is coupled through a wire connection to a computing device, comprising the steps of:

- (a) sending a discover request over the wire connection to the bridge, requesting a response that provides information about the bridge;
- (b) in response to the discover request, sending an indication of an address of the bridge and configuration information for the bridge, as well as authentication data to the computing device;
- (c) based upon the indication of the authentication data, verifying whether the bridge is compatible for being configured with properties sent by the computing device, to communicate over the wireless network;
- (d) if the step of verifying confirms that the bridge is compatible, sending a command to the bridge from the computing device to set properties of the bridge so as to enable the bridge to subsequently communicate data to and from the computing device over the wireless network;
- (e) in response to the command, setting the properties of the bridge; and
- (f) communicating data to and from the computing device through the bridge over the wireless network.

7. The method of Claim 6, wherein the step of sending the indication comprises the steps of:

- (a) on the bridge, accessing a key that is not publicly known;
- (b) applying a one-way hashing algorithm that uses the key, to a concatenation of a one-time variable, and the address of the bridge, producing a result; and
- (c) sending the result and the configuration information to the computing device.

8. The method of Claim 7, wherein the step of verifying comprises the steps of:

- (a) on the computing device, accessing the key that is not publicly known;
- (b) applying the one-way hashing algorithm that uses the key, to a concatenation of the one-time variable, and the address of the bridge producing a test result; and
- (c) comparing the result received from the bridge with the test result, so that if the result is equal to the test result, the computing device verifies that the bridge is compatible with being configured using the properties sent by the computing device.

9. The method of Claim 6, further comprising the steps of:

- (a) sending a request from the computing device to the bridge to scan for available wireless networks;
- (b) in response to the request to scan, scanning and enumerating all available wireless networks with the bridge; and
- (c) returning a response from the bridge to the computing device that identifies an address for each access point of each available wireless network enumerated in the step of scanning, and other parameters for each available network enumerated by the step of scanning.

10. The method of Claim 9, further comprising the step of selecting an available wireless network on the computing device and specifying the properties sent to the bridge for the wireless network that is selected.

11. The method of Claim 6, further comprising the step of enabling a user to initiate configuration of the bridge by selecting an option in a program executed on the computing device.

12. The method of Claim 6, wherein the computing device comprises a game console specifically designed to facilitate play of electronic games.

13. The method of Claim 6, further comprising the step of enabling a user of the computing device to selectively send a status request to the bridge, said status request indicating whether the bridge is connected in communication with a wireless network and if so, indicating a signal strength of wireless signals received by the bridge over the wireless network.

14. The method of Claim 6, further comprising the step of enabling a user to selectively query the bridge for the properties with which the bridge is currently configured.

15. The method of Claim 6, wherein after the bridge responds to the discover request, the bridge and the computing device employ a unicast communication, based upon a media access control access address for the bridge and the computing device.

16. The method of Claim 6, further comprising the step of enabling a user to change selected properties of the bridge in a user interface displayed by the computing device.

17. A memory medium that stores machine instructions for carrying out steps (a), (c), and (d) of Claim 6.

18. A memory medium that stores machine instructions for carrying out steps (b), (e) and (f) of Claim 6.

19. A computing device for setting up a bridge to communicate over a wireless network, comprising:

- (a) a memory in which machine instructions are stored;
- (b) a network interface and port used for connecting through a wire lead to a bridge;
- (c) a processor coupled to the memory and the network interface, said processor executing the machine instructions to carry out a plurality of functions, including:
  - (i) sending a discover request to a bridge that is connected to the network interface through the port, requesting information about the bridge;
  - (ii) using a key that is not publicly known for determining from the response to the discover request received from the bridge, whether the bridge has included an indication that appropriate authentication data are stored on the bridge, thereby verifying whether the bridge is compatible with being set up to communicate over the wireless network by the computing device;
  - (iii) if the bridge is compatible with being setup by the computing device, sending a command to the bridge with properties selected to configure the bridge for communicating over the wireless network; and
  - (iv) communicating over the wireless network through the bridge.

20. The computing device of Claim 19, wherein the machine instructions further cause the processor to:

- (a) receive a response to the discover request from the bridge that conveys a result;
- (b) access the key that is not publicly known;
- (c) applying a one-way hashing algorithm that uses the key, to a concatenation of a one-time variable, and an address of the bridge, producing a test result; and
- (d) compare the response received from the bridge with the test result, and if the result is equal to the test result, to verify whether the bridge is compatible with being setup using the properties sent by the computing device.

21. The computing device of Claim 20, wherein the machine instructions further cause the processor to send a request to the bridge to scan for available wireless networks.

22. The computing device of Claim 21, wherein the machine instructions further cause the processor to select an available wireless network and specify the properties sent to the bridge for configuring the bridge to communicate over the wireless network that is selected.

23. The computing device of Claim 19, wherein the machine instructions further cause the processor to enable a user to initiate configuration of the bridge by selecting an option in an operating system executed on the computing device.

24. The computing device of Claim 19, wherein the computing device comprises a game console specifically designed to facilitate play of electronic games.

25. The computing device of Claim 19, wherein the machine instructions further cause the processor to enable a user of the computing device to selectively send a status request to the bridge, said status request indicating whether the bridge is connected in communication with a wireless network and if so, indicating a signal strength of wireless signals received by the bridge over the wireless network.

26. The computing device of Claim 19, wherein the machine instructions further cause the processor to enable a user to selectively query the bridge for the properties with which the bridge is currently configured.

27. The computing device of Claim 19, wherein the machine instructions further cause the processor to enable a user to change selected properties of the bridge in a user interface displayed by the computing device.